

Application Serial No. 10/627,105
In reply to Office Action of 12 July 2007

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Attorney Docket No. 79865
CENTRAL FAX CENTER

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AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and
listings, of claims in the application:

Listing of Claims

1. (currently amended) An optical fiber cable comprising:

an inner layer of strength members wherein each strength
member of said inner layer of strength members is a
plurality of steel wires encased in a plastic tube;

an outer layer of strength members wherein each strength
member of said outer layer of strength members is a
plurality of steel wires encased in a plastic tube;

[[and]]

at least one tube containing at least one optical fiber
incorporated into said outer layer and adjacent to at
least one strength member of said outer layer of
strength members wherein a diameter of said at least
one tube is smaller than a diameter of each strength
member of said outer layer; and

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a polymer coating encasing each said at least one tube such
that the diameter of said tube approximates the
diameter of each strength member of said outer layer.

2. (original) An optical fiber cable according to claim 1,
wherein said at least one tube is formed from stainless steel
and has an internal gel and said optical fiber is surrounded by
said gel and floats within said gel.

3. (canceled)

4. (canceled)

5. (original) An optical fiber cable according to claim 1,
further comprising Bragg grating sensors spaced along a length
of said optical fiber cable.

6. (canceled)

7. (original) An optical fiber cable according to claim 1,
further comprising a first jacket surrounding said inner layer
and a second jacket surrounding said outer layer.

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8. (original) An optical fiber cable according to claim 7,
further comprising each of said first and second jackets being
formed from a plastic material.

9. (currently amended) A system for determining a velocity
profile of sound in a medium comprising:

an optical fiber cable suspended in the medium, the optical
fiber cable having an inner layer of strength members
wherein each strength member of said inner layer of
strength members is a plurality of steel wires encased
in a plastic tube, an outer layer of strength members
wherein each strength member of said outer layer of
strength members is a plurality of steel wires encased
in a plastic tube, and at least one tube containing at
least one optical fiber incorporated into the outer
layer and adjacent to at least one strength member of
said outer layer of strength members wherein a
diameter of said at least one tube is smaller than a
diameter of each strength member of said outer layer
and a polymer coating encasing each said at least one
tube such that the diameter of said tube approximates
the diameter of each strength member of said outer
layer;

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said at least one optical fiber having a plurality of Bragg
grating sensors spaced along its length;

an optical pulse generator for sending an optical pulse
into the optical cable;

an acoustic pulse generator for sending an acoustic pulse
generally along the length of the optical fiber cable,
the acoustic pulse causing local strain in the optical
cable, the local strain causing the Bragg grating
sensors in the vicinity of the strain to selectively
reflect the optical pulse back in the direction of the
optical pulse generator;

a timer for receiving the reflected optical pulse and
measuring a time of arrival of the reflected optical
pulse; and

a processor for computing the sound velocity profile as a
function of the time of arrival.

10. (original) A system according to claim 9, wherein the
acoustic pulse generator is a transducer array.

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11. (original) A system according to claim 9, wherein the transducer array is a steerable array for accurately directing the acoustic pulse along the length of the optical fiber.

12. (original) A system according to claim 9, wherein the optical pulse generator is a pulsed laser.

13. (original) A system according to claim 9, further comprising a platform for suspending the optical cable and for housing the acoustic pulse generator.

14. (original) A system according to claim 13, further comprising a weighted body attached at an end of the optical fiber cable opposite the platform, the weighted body assisting in extending the optical fiber cable from the platform.